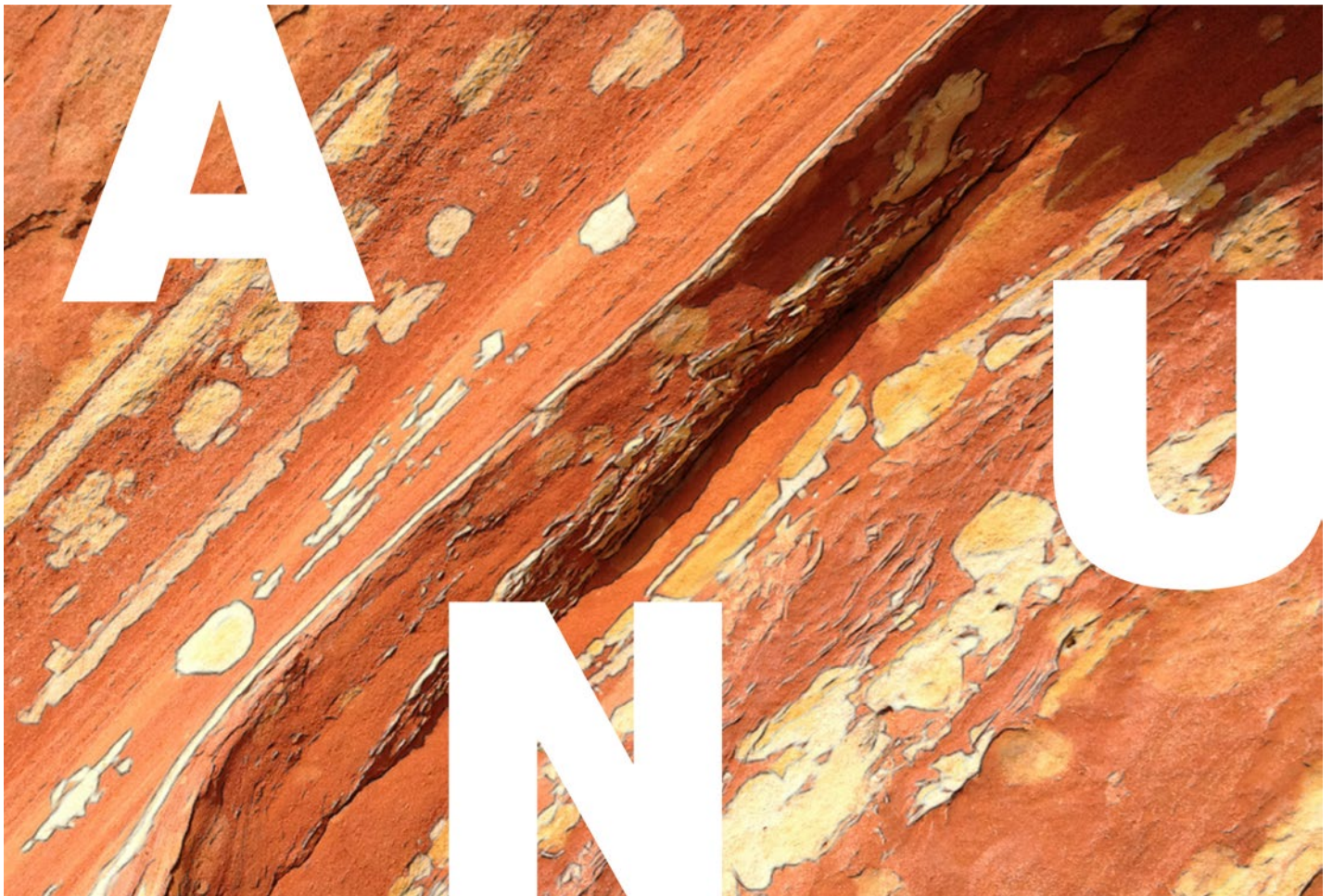




Australian  
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THE GENDERED NATURE OF  
INDIGENOUS EDUCATION  
PARTICIPATION AND ATTAINMENT

N. BIDDLE AND A. MEEHL

Centre for  
Aboriginal Economic  
Policy Research  
ANU College of  
Arts & Social  
Sciences

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April 2016



# The gendered nature of Indigenous education participation and attainment

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## Abstract

This paper reviews literature related to the intersectionality of gender and educational attainment, with a special focus on the circumstances surrounding the Australian Indigenous population. Using two sources of data, the Longitudinal Surveys of Australian Youth (LSAY) and the Programme for International Student Assessment (PISA), we conducted difference-in-difference analyses to better understand differences by gender between the non-Indigenous and the Indigenous in school attendance, school persistence and test scores. Gender differences across the outcomes analysed were generally larger for the Indigenous than for the non-Indigenous. Specifically, relative to Indigenous males, Indigenous females were more likely to achieve higher test scores, to complete Year 12 and to attend school. Our results highlight how implementing policies that recognise that Indigenous males and females often require support in different areas and through different means will be better suited to improve educational outcomes.

**Keywords:** educational attainment, gender, PISA, LSAY

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## Acronyms

ANU	The Australian National University
CAEPR	Centre for Aboriginal Economic Policy Research
COAG	Council of Australian Governments
LSAY	Longitudinal Surveys of Australian Youth
PISA	Programme for International Student Assessment

# Contents

Series Note	ii
Abstract	iii
Acknowledgments	iv
Acronyms	iv
Introduction and overview	1
Gender, education and Indigenous Australians	2
Empirical evidence on gender in Indigenous education	3
Results	5
Gender differences in school attendance	5
Gender differences in test scores	7
Gender differences in school persistence	9
Discussion and concluding comments	11
Notes	12
References	13

## Tables and figures

<b>Fig. 1.</b> Differences in standardised index scores of school attendance for males and females, by Indigenous status, 2012	6
<b>Fig. 2.</b> Gender differences in average test scores, by Indigenous status, 2009	8
<b>Fig. 3.</b> Differences in Year 12 persistence between males and females, by Indigenous status, 2009–12	10



## Introduction and overview

Educational attainment is often viewed as a means through which an individual's quality of life can be improved. Employment opportunities, health outcomes, and social and emotional wellbeing are directly influenced by educational attainment (Purdie & Buckley 2010, Biddle & Cameron 2012a). It is therefore no surprise that various Australian governments' efforts to reduce the gap between Indigenous and non-Indigenous living standards have focused on increasing educational attainment for Indigenous Australians.

One government policy that has found significant traction is the Council of Australian Governments' (COAG's) Closing the Gap in Indigenous Disadvantage reform agenda. Formed in 2008, it originally included six targets, three of which are directly related to education. These goals are to:

- ensure access for all Indigenous 4-year-olds in remote communities to early childhood education by 2013
- halve the gap in reading, writing and numeracy achievement for Indigenous students by 2018
- halve the gap for Indigenous Australians aged 20–24 in Year 12 attainment or equivalent attainment rates by 2020.

According to the Prime Minister's 2015 *Closing the gap* report, the first of these three targets was not met, the second target is not on track and the third target is on track (Commonwealth of Australia 2015). In 2014, COAG added a new target: to 'close the gap between Indigenous and non-Indigenous school attendance within five years (by 2018)' (Commonwealth of Australia 2015:11). This additional goal was based on research that found that school absenteeism can account for up to 20% of the difference between Indigenous and non-Indigenous test scores among 15-year-olds (Biddle 2014:13). Little progress has been made in the area of school attendance in recent years (Commonwealth of Australia 2015:12), and therefore serious targeted policy changes will have to occur if this target is to be met.

Quantitative research on the education profile of Indigenous students has increased dramatically. The *Overcoming Indigenous disadvantage* report pays considerable attention to education, with detailed descriptive analysis by location and outcome variable (SCRGSP 2014). More detailed econometric modelling has also increased – most recently by Mahuteau et al. (2015). While very relevant for policy and highlighting differences between Indigenous and non-Indigenous students, this work tends not to focus on gender.

This paper will demonstrate that there are sufficient empirical differences between the outcomes and determinants of education by gender, and that policies focused on improving male Indigenous educational attainment separate from female Indigenous educational attainment may help to meet all of these targets.

The educational outcomes of Indigenous Australians have been explored in detail, as have the reasons for the disparities between Indigenous and non-Indigenous educational outcomes (Biddle & Cameron 2012b, Biddle 2013, Biddle & Bath 2013, Crawford & Biddle 2015). The differences between educational outcomes for Indigenous men and women, however, are often highlighted but are rarely explored in depth. This paper aims to contribute to existing literature by exploring the reasons for the disparities between male and female Indigenous education achievement, particularly at the high-school level.

This paper begins by exploring the theoretical literature related to gender and education attainment. We then turn to the existing literature related to the circumstances surrounding Indigenous male and female education achievement at the school level, and explain how early schooling differences between the two genders may have lasting implications.

The review of the empirical and theoretical literature is followed by three sections of empirical results: (1) school attendance in 2012; (2) maths, science and reading for 15-year-olds in 2009; and (3) high-school persistence for those aged 15 in 2009. We then present results from an analysis of data from the Longitudinal Surveys of Australian Youth (LSAY) 2009 cohort and the 2012 Programme for International Student Assessment (PISA) to highlight differences between male and female test scores, school attendance, and Year 12 persistence within the Australian Indigenous and non-Indigenous populations.

The analytical framework for the paper in essence takes a difference-in-difference approach. Specifically, we looked empirically at differences between the relevant outcomes of Indigenous males and Indigenous females. We then tested (statistically) whether that difference is in the same direction and of the same scale as the difference between non-Indigenous males and non-Indigenous females.

In general, we found that there are large differences between males and females in a range of school outcomes, with Indigenous females tending to have better outcomes than males. However, there are also a number of complicating factors that we explore in our



analysis. One limitation that we recognise, but is beyond the scope of this paper to explore in detail, is the reliance on quantitative data and the focus on mainstream education. As two non-Indigenous researchers trained in Western epistemologies, we are mindful that our analysis is framed to deliberately and specifically engage with policy dialogues that assume the value of Western education and formal schooling systems. As Shields et al. (2005) make clear, however, formal education systems are settings within which Western ideals and values can too easily be esteemed higher than Indigenous world views, needs and aspirations. At the same time, though, many Indigenous carers highlight their aspirations for their children to succeed in such systems. This means, therefore, that the results should be interpreted not as a call for Indigenous boys or girls to be the only agents of change, but rather that the education system and policy settings need to use results such as those presented in this paper to adjust to the needs and aspirations of Indigenous children and youth of both genders.

## Gender, education and Indigenous Australians

As with many aspects of day-to-day life, gender permeates thinking surrounding educational outcomes. Various theories have developed that attempt to explain this. The idea of gender essentialism ‘involves a wide range of deeply embedded assumptions that women have a natural aptitude for tasks involving care for and communication with other humans, while men are naturally better suited to abstract reasoning and solving problems related to technology’ (Sikora & Biddle 2015:3). The theory bases its assumptions on the fact that careers in areas such as child care are often female dominated, or viewed as being better suited to women, while fields such as engineering and mathematics are often almost exclusively male domains (Colley et al. 2003).

A related theory has been developed that helps to explain women’s poor representation in certain fields such as maths and science: stereotype threat. That is, ‘a concern or anxiety that one’s performance or actions can be seen through the lens of a negative stereotype’ (Shapiro & Williams 2011:175). This can disrupt or undermine either a male or female’s performance in a negatively stereotyped domain. Lastly, gender structure theory ‘recognises that individual choices of students are enactments of gendered identities shaped in a multitude of subtle ways that are difficult to articulate’ (Sikora & Biddle 2015:12). Therefore, gender, career expectations and Indigenous status share a complex relationship. All of these theories

intersect when exploring the gendered educational outcomes of Indigenous Australians.

Gender is associated with the education and career aspirations of both Indigenous and non-Indigenous students, though the specifics often differ. Many Indigenous males highlight professional sporting careers as their first choice following school, while Indigenous females are more likely to prefer a professional or university-trained career (Craven et al. 2005). Social stratification theory holds that adolescents are aware of the structural obstacles, including gender, that may hinder achievement of their education and career aspirations (Sikora & Biddle 2015). This can constrain the education choices males and females make in terms of field of study and type of education qualification pursued. For Indigenous students, gender limitations are compounded by the fact that Indigenous Australians often set relatively modest education and career aspirations (Craven et al. 2005).

The reasons for gendered differences in educational outcomes and expectations are varied. To begin with, differences have been identified between the way in which males and females learn, and the curriculum that is most relevant to them (Millard 2002). A majority of male students prefer multimodal instruction, whereas female students prefer single-mode instruction (Wehrwein et al. 2007). Aligning with this, gains in confidence by female students increase in response to clarity and organisation, whereas gains in confidence by male students increase in response to instructor interaction and feedback (Colbeck et al. 2001). Generally speaking, therefore, female students react most positively to clear instructions that are outlined a single way, while male students react most positively to instructions that are delivered in a variety of modes and give them the opportunity to ask questions and receive feedback.

These findings would suggest that male students perform best in the classroom when given the opportunity to actively engage with their teacher and receive personalised feedback that they are able to interrogate. Extended teacher–student interaction is not always possible in the busy and often impersonal classroom environment, and students may not be willing or able to seek feedback outside normal school hours.

Different responses to experiences of racism or discrimination in a school setting may also explain some of the difference. Although, there is no evidence from the National Aboriginal and Torres Strait Islander Social Survey or the Longitudinal Study of Indigenous Children that carers are more likely or likely to report that boys or



girls experience bullying or unfair treatment because of their Indigenous status, it may be that the type of racism/discrimination experienced, as well as the response to it, varies along gender lines (Connolly 1998, Bécares & Priest 2015). This intersectionality is an underresearched area in Australia.

Additionally, males and females may view the costs and benefits of education differently, especially at the postschool level. One important difference is that the costs and benefits of postschool education for women are influenced in different ways by fertility and child-rearing choices. Women are still more likely to have care responsibilities than men (Yap & Biddle 2012), and those who have children before pursuing postschool education qualifications will have to place their child in care while they commit to their studies, or balance child-rearing and study commitments. Furthermore, Biddle and Cameron (2012a) have shown that certain economic benefits of education may be less for females, particularly if they spend less time in the workforce postgraduation. Additionally, the costs and benefits of school-level education are different for men and women, including the Indigenous population. For example, Indigenous males would appear empirically to find it less limiting on their future educational attainment to fail to complete Year 12 or equivalent than Indigenous women (Crawford & Biddle 2015).

There are also nontraditional costs to education, some of which suggest a greater social return to education for females. Females have, on average, higher levels of noncognitive skills along many dimensions of learning – including attention span, organisation and preparation – than males (Becker et al. 2010). Higher levels of noncognitive skills also lead to a lower incidence of behavioural problems, which can disrupt learning (Riphahn & Schwientek 2015). This is important because ‘the increased difficulty of school that results from poor cognitive and/or noncognitive skills related to performance in school’ translates to lower total costs of schooling for women (Becker et al. 2010:225). This may help to explain why Indigenous women are more likely to complete Year 12 than their male counterparts and are more likely to attain a university-level qualification, which requires high levels of attention, organisation and preparation for successful completion.

Certain family dynamics are more damaging to male educational outcomes than to female educational outcomes. For example, living in a single-parent household is of greater detriment to male educational attainment than to female educational attainment (Riphahn & Schwientek 2015). Aligning with this, the

absence of a father will have a greater negative effect on their son’s educational attainment than on their daughter’s educational attainment (Riphahn & Schwientek 2015). As Australian children are more likely to live with their mother than their father in the event of a separation or divorce (ABS 2011), parental separation is more likely to negatively affect the educational outcomes of male children than female children in the family. Additionally, families in which the father has a low occupational status are more likely to see negative effects on a male child’s educational outcomes than on a female child’s outcomes (Riphahn & Schwientek 2015). Increasing rates of female educational attainment have also been found to produce daughter-friendly rather than egalitarian parental attitudes, often at a cost to the educational outcomes of any sons present in the family (Riphahn & Schwientek 2015). Therefore, many modern family dynamics are more likely to negatively affect male educational outcomes than female educational outcomes.

The relationship between gender and educational outcomes is complex, and is often complicated by stereotypes and assumptions. None of the previous discussion is to suggest that differences are innate as opposed to being based on childhood experiences and societal norms. Nonetheless, the literature points to empirical differences between males and females. The following section will demonstrate that these complexities are often amplified within the Indigenous population, thereby exacerbating pre-existing tensions between gender and education.

## **Empirical evidence on gender in Indigenous education**

According to the 2011 Census (as analysed by Biddle & Bath 2013), 62.9% of Indigenous children aged 4–5 years (who were not attending infants or primary care) were attending preschool compared with 72.0% of the non-Indigenous population in 2011, and 62.7% of the Indigenous population in 2006. Even from this low base, however, there are differences by gender. In a separate analysis for this paper using the same dataset, there was a significant and substantial difference in preschool participation for Indigenous females, who were 3.3 percentage points more likely to be participating in education, controlling for other observed characteristics that might predict participation. Although participation may be interpreted differently to attendance, and the age at which preschool attendance begins varies between Australian states, these data indicate that Indigenous males are at an educational disadvantage compared with their female counterparts from an early age.

The links between preschool attendance and future educational attainment are well established (Biddle & Bath 2013, Hewitt & Walter 2014). A recent analysis showed that Indigenous children who participated in preschool had significantly and substantially better outcomes across a range of domains (controlling for background characteristics) (Arcos-Holzinger & Biddle 2015) – there were no outcomes identified that were significantly better for those who did not participate in preschool compared with those who did. The authors did find, however, that long hours of day care were associated with some negative outcomes, which was also found for the total population in a separate analysis (Biddle & Seth-Purdie 2013).

Additionally, although there are no data as far as the authors are aware for the Indigenous population, there is evidence in other contexts that ‘successful early learning childhood interventions scaffold children and supplement parenting’ (Heckman & Mosso 2014:51). Therefore, early childhood interventions have been shown experimentally to induce a change in parental behaviour by increasing the child’s skills (Heckman & Mosso 2014), and this can have long-lasting positive effects on the child’s educational outcomes. It is possible that the disparities between Indigenous males and females at future levels of educational attainment are attributable, in part, to discrepancies in preschool attendance.

Educational differences between Indigenous males and females continue to manifest themselves during school. As previously outlined, school absenteeism explains approximately 20% of the gap between Indigenous and non-Indigenous test scores for 15-year-olds (Biddle 2014). Therefore, relatively high rates of male Indigenous absenteeism can help to explain the difference between male and female Indigenous test scores documented later in this paper. Although the quantitative evidence is lacking, qualitative evidence gives some support for cultural practices, such as initiation, contributing to lower school attendance rates for Indigenous males (Bourke et al. 2000). This is likely to be the case for only a small proportion of the Indigenous population living in relative remote areas. Furthermore, these cultural practices are likely to be vitally important to the Indigenous communities involved, and this in no way suggests that they should be suppressed. Rather, they are mentioned here descriptively, rather than normatively.

Additionally, the type of school attended may contribute to the disparity between Indigenous male and female test scores. At the infant/primary level, Indigenous males are more likely to attend government schools than their female counterparts, whereas Indigenous

females are slightly more likely to attend a Catholic or other nongovernment school. At the secondary level, Indigenous males are still slightly more likely to attend government schools, whereas Indigenous males and females are equally likely to attend a Catholic school, and Indigenous females are still slightly more likely to attend another type of nongovernment school (Biddle 2013). Students who attend nongovernment schools have higher predicted test scores than those who attend government schools (Biddle 2013); therefore, the fact that Indigenous males are more likely to attend government schools than Indigenous females may help to explain the disparity in their test scores and, thereby, their educational outcomes overall.

According to the 2011 Census, 40.4% of Indigenous females aged 20–24 years had completed Year 12 compared with only 35.2% of Indigenous males of the same age. Between 2006 and 2011, the rate of male Indigenous attainment improved by 4.5 percentage points and the rate of female Indigenous attainment improved by 4.8 percentage points (Biddle 2013). Year 12 attainment is virtually essential for making a direct transition from secondary to university education (Crawford & Biddle 2015). According to the 2011 Census data, Indigenous males and females who do not complete Year 12 are less likely to attain a postschool qualification than their counterparts that did complete Year 12. Furthermore, Indigenous males who complete Year 12 are 12 times more likely to obtain a bachelor degree or above, and are more than 3 times as likely to attain a diploma or advanced diploma than their male counterparts who fail to complete Year 12. Year 12 attainment does not have the same predictive effect on Indigenous females. (Although it is still statistically significant – women who complete Year 12 are a little more than 5 times as likely to attain a bachelor degree or above, and just over twice as likely to receive a diploma or advanced diploma [Crawford & Biddle 2015].) It is therefore essential that rates of Indigenous male Year 12 attainment improve if postschool qualification attainment rates are to improve, especially at the university level.

Although Indigenous females are more likely to complete Year 12 than Indigenous males, Indigenous males are more likely to attain any type of postschool qualification. In 2011, 45% of working-age Indigenous males had a postschool qualification, compared with 42% of Indigenous females (Crawford & Biddle 2015). This disparity was greatest in the area of certificate attainment: 33% of working-age Indigenous males had a certificate compared with only 23% of Indigenous females. However, this disparity has lower social and economic returns.

Results for higher levels of education are somewhat different. According to 2011 Census data, Indigenous females are more likely to have attained a bachelor degree or above, or a diploma or advanced diploma than Indigenous males (Crawford & Biddle 2015). Indigenous women are also more likely to be currently studying for a degree or higher – only 33% of Indigenous university students are male (Crawford & Biddle 2015).

High rates of male Indigenous incarceration may also help to explain why Indigenous females are more likely to complete a university-level qualification than Indigenous males. Using data from the Australian Bureau of Statistics (ABS 2015), the Indigenous population was much more likely to be in prison than their non-Indigenous counterparts (13 times the rate once age is held constant, or 1951 people per 100 000 compared with 153 for the non-Indigenous population). More importantly, from the point of view of this paper, 90% of Indigenous prisoners were male and 24% of adult Indigenous prisoners were under 24 years of age in 2015, which is the age at which most postschool qualification studies commence. Although many of those in prison are unlikely to have undertaken postschool studies anyhow, some might have. As bachelor and other university degrees are completed over longer periods of time than certificate qualifications, the comparatively high rate of Indigenous male involvement in the legal system may help to explain why Indigenous women are more successful in attaining university-level qualifications than their male counterparts.

Lower levels of educational attainment are also associated with higher levels of incarceration within the Indigenous population. In 2012, members of the Indigenous population outside the prison system were almost 4 times as likely as their incarcerated counterparts to have completed Year 12 (AIHW 2013). Additionally, it is evident that higher levels of schooling must be achieved if Indigenous youth are to stay out of prison. For example, Indigenous entrants into prison were twice as likely as non-Indigenous entrants to have only completed Year 8 or lower (AIHW 2013). Additionally, Indigenous prison entrants aged 18–24 years were less likely to have completed Year 12 (instead completing only up to Year 10 or 11) than their counterparts in the general Indigenous population (AIHW 2013). At the postschool qualification level, Indigenous prison entrants aged 18–24 were more likely to have obtained a non-school qualification (in all observed cases, a trade certificate) than their counterparts in the general Indigenous population (AIHW 2013). It is evident that Indigenous Australians who have completed Year 12 have the best chance of staying out of prison.

Another difference in Indigenous male and female postschool qualification attainment is that Indigenous women continue to complete postschool qualifications well into their lives. Approximately 70% of mature-age Indigenous university students (aged 25–64) are female (Crawford & Biddle 2015). Changing caring duties may contribute to this: as women age, their ability to seek educational opportunities may improve as their own children age and no longer require their care. Additionally, Indigenous women may return to study to improve their employment prospects (Crawford & Biddle 2015) and, thereby, their income potential.

The descriptive statistics presented in this section have shown that Indigenous men are more likely to attain any form of postschool qualification than Indigenous women, but the latter are more likely to attend preschool, complete Year 12 and attend university. Additionally, Indigenous women are more likely to pursue higher education qualifications later into their lives, presenting them with opportunities to upskill throughout their careers.

## Results

### *Gender differences in school attendance*

The data used here come from the 2012 PISA – an international set of surveys that aims to test the skills and knowledge of students aged 15 years across 65 countries or regions within countries. Surveys are conducted every three years, and we analysed the data taken from the most recent survey results available. The surveys collect information on various topics, with an emphasis on standardised tests across maths, reading and science. Information is also collected on students' backgrounds by asking students for their best estimate of the education levels of their parents. Data on education-related information, including noncognitive information, are also collected.

Approximately 14 500 Australian students participated in PISA 2012. Students from all Australian jurisdictions, from across the remoteness hierarchy and from all schooling sectors were represented in the survey. In an effort to allow for robust comparisons between Indigenous and non-Indigenous students, the Australian component of PISA oversamples Indigenous students: 1991 Indigenous students were assessed (Thomson et al. 2013). In total, 1070 students were in metropolitan areas (roughly equivalent to major cities in the standard Australian Bureau of Statistics hierarchy), 800 in provincial areas (roughly equivalent to inner and outer regional Australia) and 121 in remote areas.

The dependent variable in this analysis was an index of student attendance based on the frequency with which the student reported that they were late for school, skipped a whole school day or skipped classes within a school day. This index was standardised across the Australian sample to have a mean of zero and a standard deviation of one.

The dependent variable was analysed using ordinary least squares, taking into account sample weights and survey design through balanced repeated replication variance estimation, with separate models estimated for Indigenous and non-Indigenous students. Three models were estimated:

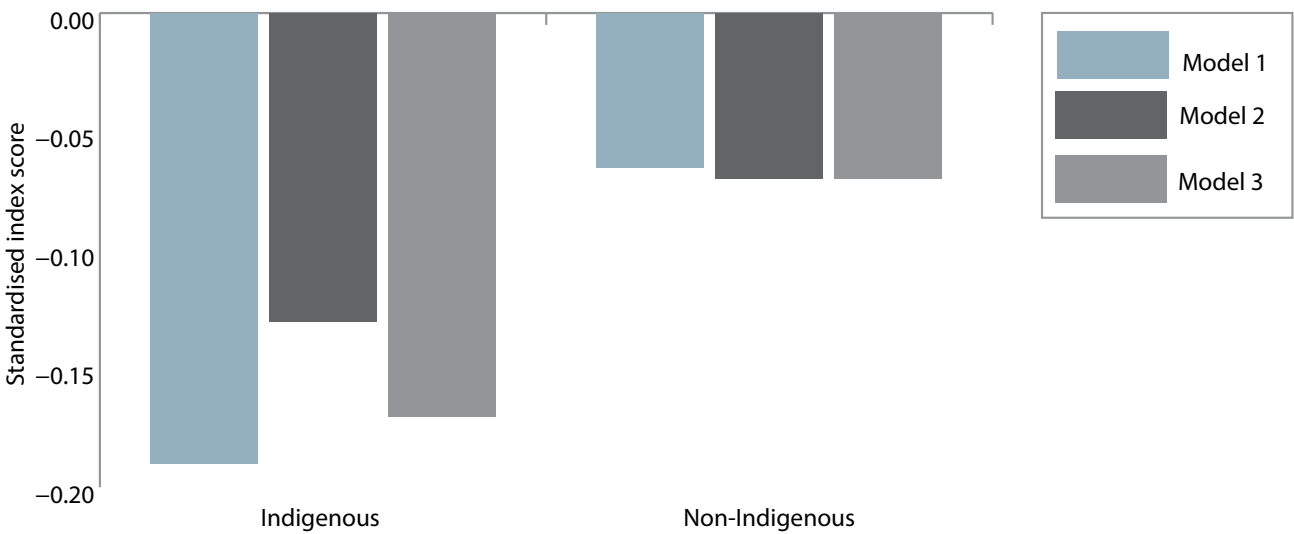
- model 1 – gender as the only explanatory variable
- model 2 – gender plus the following variables: school location, current grade, whether attended preschool, age commenced school, whether the child speaks a language other than English at home, standardised wealth and parental education
- model 3 – all of the variables from model 2 plus the child’s PISA test scores.

Results are summarised in Fig. 1, focusing on the predicted differences between males and females. Solid bars indicate where the difference is statistically significant from zero (at the 10% level of significance).

Values above the line were not seen in the results, but would be where females have higher scores than males (representing higher levels of truancy). The values below the line are where males have higher scores.

School attendance affects many aspects of a child’s educational attainment, including their test scores. As noted above, previous research has found that school absenteeism can account for up to 20% of the difference between Indigenous and non-Indigenous test scores among 15-year-olds (Biddle 2014). Additionally, the opportunities school attendance provides for socialisation are also important, as a child’s peer group is one of many factors that can affect their exam performance (Bradley & Nguyen 2004). Therefore, students are more likely to perform well if they are attending school and socialising with their school peers than if they are socialising with students who are also not attending or have dropped out of school. Absenteeism strongly affects exam performance (Biddle 2014), and test scores are a good predictor of Year 12 completion (Bradley & Nguyen 2004). Therefore, as school attendance is essential for completing Year 12, it is also essential for future educational attainment.

**FIG. 1.** Differences in standardised index scores of school attendance for males and females, by Indigenous status, 2012



Overall, Fig. 1 demonstrates that, in both student populations, males are more likely to be absent than females. Importantly, though, the difference is much larger for the Indigenous population than for the non-Indigenous population.<sup>1</sup> As outlined previously, this difference-in-difference could be attributable to gendered Indigenous cultural practices (Kral 2010). Compounding this, male initiation ceremonies occur around the age of 14 or 15, after which a period of culturally significant premarital independence would traditionally occur. However, mandatory school attendance makes this postceremonial and premarital independence, which often involves travel away from a male's home community, difficult to achieve (Kral 2010). These cultural factors could contribute to lower attendance rates for Indigenous males. However, the results presented in this paper related to gender differences hold in urban and regional areas where such cultural continuity is likely to be much less and/or expressed in quite different ways. Ceremonial and initiation practices are therefore only likely to be a very small part of the explanation for gender differences.

Additionally, previous research has suggested that the classroom environment better caters to the educational needs of female students rather than male students (Colbeck et al. 2001, Wehrwein 2007) and, therefore, that male students may be more inclined to be absent if they feel that their time spent in the classroom is not worthwhile. There is greater uniformity in the non-Indigenous results of school absenteeism according to which of the three models is used, indicating that the reasons for Indigenous truancy are more varied and more responsive to gender and other variables than rates of non-Indigenous truancy.

The difference between the results of model 1 and model 2 within the Indigenous population demonstrates that including various background characteristics of students as explanatory variables reduces the discrepancy between male and female attendance rates (these differences are statistically significant). Therefore, reasons for Indigenous male truancy are complex and multifaceted, and may begin with the home environment. Additionally, the result from model 3 indicates that test scores are a significant predictor of truancy for Indigenous males. This may be attributable to the fact that school absenteeism can account for a significant proportion of differences between students' grades (Biddle 2014), as missed work can lead to lower test scores.

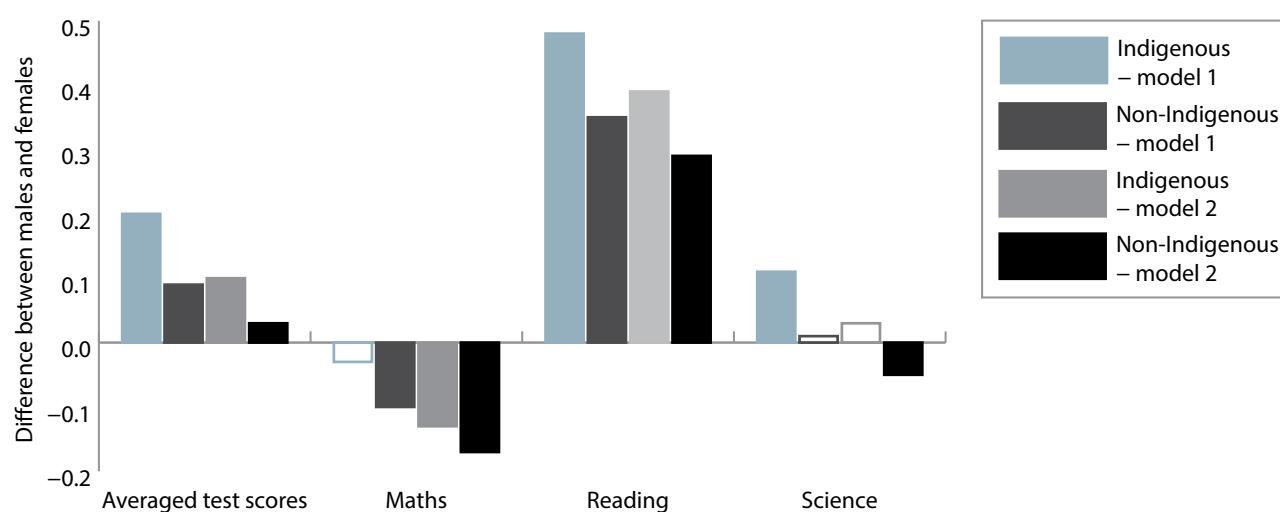
## *Gender differences in test scores*

The data analysed here are taken from results of the LSAY, which is a survey program that tracks adolescent Australians as they move from school through postschool pathways. The survey collects information on a range of topics, including student achievement, student aspirations, school retention, social background, attitudes to school, work experiences and what students are doing when they leave school. This may include vocational and higher education, employment, job-seeking activity and satisfaction with various aspects of the respondents' lives. The survey has been designed to increase understanding surrounding key transitions and pathways in young peoples' lives, particularly the transitions from compulsory schooling to further education and training and the labour market. In this paper, data from the 2009 cohort of the LSAY were analysed. The 2009 LSAY had information on 14 251 children aged 15 years at the time of the survey, of which 1143 were Indigenous.

The dependent variables for the analysis were continuous and scaled to have a mean of zero and a standard deviation of one. Analysis once again used ordinary least squares, and took account of sample weights and survey design through balanced repeated replication variance estimation. The first dependent variable was the average of test scores across three domains (maths, reading and science). The standardised values for each of the individual domains were also analysed. The following explanatory variables were used:

- model 1 – gender as the only explanatory variable
- model 2 – gender plus the following variables: school location, current grade, whether attended preschool, age commenced school, whether speaks a language other than English at home, standardised wealth and parental education.

Results are summarised in Fig. 2, focusing on the predicted differences between males and females. Solid bars indicate where the difference is statistically significant from zero (at the 10% level of significance), hollow bars indicate where difference is not statistically significant. Values above the line are where females have higher scores than males, those below the line are where males have higher scores.

**FIG. 2.** Gender differences in average test scores, by Indigenous status, 2009

The difference between males and females in average test scores is greater for Indigenous youth than for non-Indigenous youth, regardless of whether other observable characteristics such as the location of the school, the age at which the child started school and the educational attainment of the parents of the child are used as explanatory variables.<sup>2</sup> In both the Indigenous and the non-Indigenous population, females outperform their male counterparts when maths, reading and science test scores are averaged. This aligns with previous research (Jacob 2002, Buchmann et al. 2008).

However, in model 1, Indigenous females outperform their male counterparts to an even greater extent than non-Indigenous females. That is, Indigenous males lag behind their female counterparts even more than non-Indigenous males. In model 2, Indigenous females still outperform their male counterparts to a greater extent than non-Indigenous females, although the gap has narrowed. This is attributable to various gendered social factors, the effects of which are compounded by cultural factors. The ways in which females learn are better suited to the classroom (Colbeck et al. 2001) and the non-economic costs to education are lower for females than they are for males (Becker et al. 2010). Compounding this, many aspects of traditional Western education clash with various Indigenous Australian cultural practices, including the segregation of men and women in certain situations and practices surrounding Indigenous male maturation. These discrepancies have left Indigenous males at an educational disadvantage.

In maths test scores, the difference between males and female scores is much greater for non-Indigenous youth. That is, Indigenous boys do not outperform Indigenous girls as much as non-Indigenous boys outperform non-Indigenous girls. This aligns with the findings of various national international large-scale assessments, which concluded that there can be great variability in the size of the gaps between male and female levels of achievement in test scores (Buchmann et al. 2008). Typically, girls and boys obtain similar maths test scores during their early years of schooling, but differences emerge as students progress through their years of schooling (Buchmann et al. 2008).

In model 1, there is no statistically significant difference between the maths test scores of Indigenous males and females, whereas non-Indigenous males outperform their female counterparts. In model 2, however, Indigenous males outperform their female counterparts, but non-Indigenous males outperform their female counterparts to an even greater extent. Therefore, the differences in Indigenous male and female maths test scores are attributable to observable characteristics such as the location of their school, whether they attended preschool and whether they speak a language other than English at home. The differences between male and female test scores may also be attributable to the theory of gender essentialism, which involves the assumption that men have a natural affinity for tasks that involve abstract reasoning and problem solving (Sikora & Biddle 2015), and therefore outperform girls in maths because girls assume that they are not well suited to the task (Colley et al. 2003).



The largest gaps between genders occurred in reading test scores, particularly for Indigenous youth. This also aligns with various national and international large-scale assessments that have found that, typically and similar to maths, girls and boys obtain similar reading test scores in early years of schooling and differences begin to manifest as students progress through school (Buchmann et al. 2008). Additionally, male students are overrepresented in populations with reading disabilities and antisocial behaviour (Buchmann et al. 2008). One study found that antisocial behaviour and reading difficulties share a reciprocal relationship, and targeting either reading achievement or antisocial behaviour during early years of schooling can produce a change in both behaviours (Trzesniewski et al. 2006).

In model 1, when only gender is included as an explanatory variable, Indigenous females outperform their male counterparts to a greater extent than non-Indigenous females. In model 2, when other observable characteristics are introduced, Indigenous females still outperform their male counterparts to a greater extent than non-Indigenous females; however, the gap between Indigenous and non-Indigenous reading test scores has narrowed. Therefore, gender plays a greater role in explaining differences between male and female reading test scores in the Indigenous population than in the non-Indigenous population. Indigenous females are more likely to encounter situations in which they need to read and write because of their role as primary caregivers (Kral & Schwab 2003), and therefore Indigenous female may be more motivated than their male counterparts to become proficient readers.

There is considerable variation in the gap in science test scores between Indigenous and non-Indigenous males and females when including different explanatory variables in the analysis. In model 1, when only gender is included, Indigenous females outperform their male counterparts, but there is no statistically significant difference between the science test scores of non-Indigenous males and females. In model 2, however, there is no statistically significant difference between the science test scores of Indigenous males and females, whereas non-Indigenous males outperform their female counterparts. Background characteristics would therefore appear to explain almost all of the difference between Indigenous male and female science test scores. Like with maths test scores, this may be attributable to the theory of gender essentialism, as well as the theory of stereotype threat, which can disrupt and/or undermine females' performance in science tests, as they do not want their performance to 'be seen through the lens of a negative stereotype' (Shapiro & Williams 2011:175).

Analysis of the LSAY data demonstrated that Indigenous males are seriously disadvantaged in terms of educational outcomes compared with their female counterparts, and also compared with their non-Indigenous male and female counterparts. Indigenous females significantly outperform their male counterparts in averaged test scores, especially in reading, but also in science, although to a smaller extent. Compounding this, the gaps in test scores between non-Indigenous males and females are not as large as the gaps between Indigenous males and females. Therefore, when it is noted that non-Indigenous adolescents outperform their Indigenous counterparts, it is the Indigenous males that are struggling the most and therefore require the greatest support at school.

### *Gender differences in school persistence*

For this part of the analysis, we used data from wave 4 of the 2009 cohort of the LSAY, collected in 2012. By this time, most students in the sample were 18 years old. Of the 6541 students still in the sample, 5977 (91.4%) were no longer at school. Of these, 5321 (89.0%) had completed Year 12, with the remaining 11.0% having left school before completing Year 12. The outcome variable used in this part of the analysis combines current attendance and past completion into a measure of Year 12 persistence. It is calculated as the probability of not dropping out of school before completion with a value of one for those who were either still at school or have already completed Year 12, and a value of zero for those who had dropped out before completing Year 12.

An important cautionary note is that the 6541 students for whom we have information on Year 12 dropout by wave 4 represent only 45.9% of the original 2009 cohort. Furthermore, this sample attrition is not random, with Indigenous students in particular much more likely to drop out of the LSAY (Rothman 2009). To control for this (to the extent that we can using observable information), we used the weights available in the data such that those observations still in the data in 2012 who would be more likely to have dropped out of the survey contribute more to the analysis. A rich amount of information can inform the weights, including the student's age, sex, geography and school sector. It should be noted though, as is standard with analysis using longitudinal data, that it is not possible to control for attrition because of unobservable characteristics.

The relationship between gender and Year 12 persistence was estimated across three models, undertaken separately for Indigenous and non-Indigenous students. All three models use Year 12 persistence as the

dependent variable (estimated via maximum likelihood estimation of the probit model), with the following explanatory variables:

- model 1 – gender as the only explanatory variable
- model 2 – gender plus the following variables measured in wave 1: school location, current grade, whether attended preschool, age commenced school, whether the child speaks a language other than English at home, standardised wealth and parental education
- model 3 – variables from model 2 plus the child's LSAY test scores at age 15.

Results are summarised in Fig. 3 as marginal effects, or the difference in probability of completing or still undertaking Year 12 between males and females while holding other characteristics constant. Differences that are not statistically significant are shown as hollow bars.

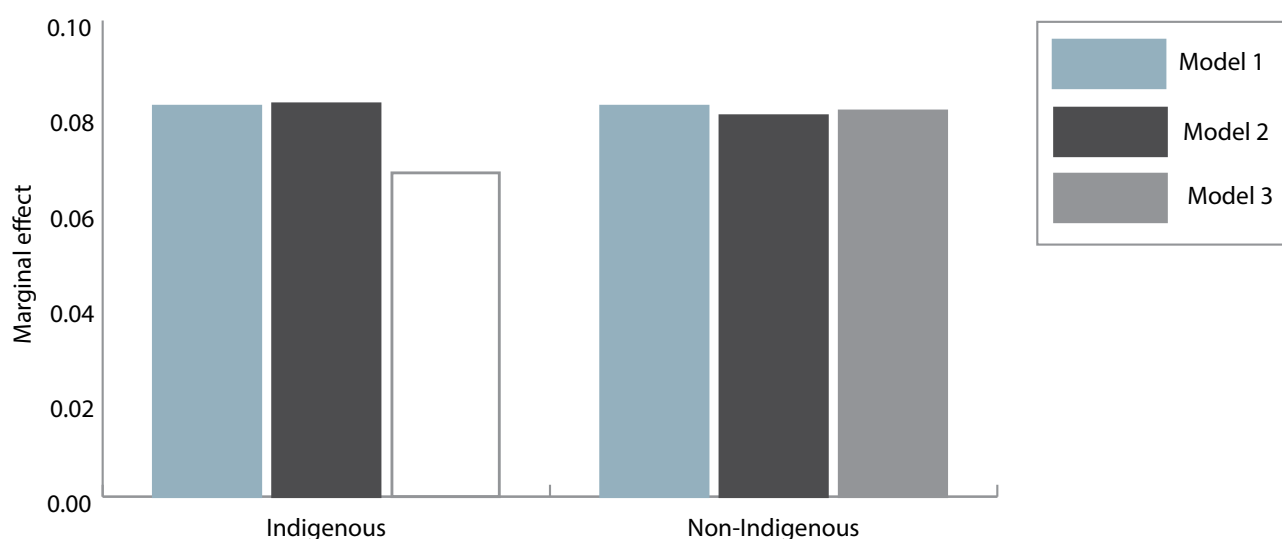
The significance of Year 12 persistence has been highlighted by COAG's Closing the Gap reform agenda, with one of the targets aiming to 'halve the gap for Indigenous Australians aged 20–24 in Year 12 attainment or equivalent attainment rates' (Commonwealth of Australia 2015:17). Unfortunately, it is not possible with the available data to include equivalent postschool qualifications, but Year 12 attainment is virtually essential for making a direct transition from secondary to tertiary education in the university sector (Crawford & Biddle 2015). This is crucial, especially for Indigenous males, because their degree performance reaches its peak

before the age of 34 (Naylor & Smith 2004). Additionally, dropout probability increases with age for both men and women (Naylor & Smith 2004). Although Indigenous males are more likely to attain a postschool qualification than their female counterparts, Indigenous females are more likely to complete a university-level qualification (Crawford & Biddle 2015).

Overall, there are large and statistically significant differences between male and female Year 12 persistence for both Indigenous and non-Indigenous youth.<sup>3</sup> However, in models 1 and 2, non-Indigenous and Indigenous levels of Year 12 persistence favour females to approximately the same degree. This indicates that, when only gender is considered, there is no difference between Indigenous and non-Indigenous Year 12 persistence in this LSAY cohort.

Test scores obtained at age 15 are combined with model 2 to create model 3. This is significant, because a young person's test scores at school are clearly an important determinant of their school-to-work transition (Bradley & Nguyen 2004). The difference between Indigenous male and female Year 12 persistence is small and no longer statistically significant once test scores at age 15 are included as an explanatory variable, as seen in model 3. This is probably because of the small sample sizes analysed here for the Indigenous population. It is also weak evidence that what happens to a child up to the age of 15 is a large predictor of gender differences, and that gender differences do not appear to widen after the age of 15.

**FIG. 3.** Differences in Year 12 persistence between males and females, by Indigenous status, 2009–12



The analysis of the LSAY data also demonstrates that Indigenous females are more likely than their Indigenous male peers to complete Year 12. Although Indigenous males are more likely to complete a postschool qualification than their female counterparts, Indigenous females are more likely to obtain a university-level qualification (Crawford & Biddle 2015). Improving the rates of Indigenous male Year 12 completion may help to improve the rates of Indigenous male university qualification by allowing Indigenous males to enter university at a younger age, thereby increasing their chances of successful completion (Naylor & Smith 2004). It is therefore important that COAG's goal to 'halve the gap for Indigenous Australians aged 20–24 in Year 12 attainment or equivalent attainment rates' includes the development of policies that are targeted at adolescent Indigenous males to improve their rates of Year 12 persistence.

## Discussion and concluding comments

The analyses in this paper have focused on gender differences in test scores, school persistence and school attendance within the Indigenous and non-Indigenous populations. Overall, Indigenous females are more likely to achieve higher test scores than their male counterparts, are more likely to complete Year 12 and more likely to attend school. Specifically, Indigenous females significantly outperform their male counterparts in reading, Indigenous males outperform females to a smaller extent in maths, and Indigenous females outperform males to a very small extent in science.

Year 12 persistence within the Indigenous population also favours females, although when a large combination of explanatory variables is used, the difference between Indigenous male and female Year 12 persistence is no longer statistically significant. Therefore, this is weak evidence that what happens to a child up to the age of 15 is a large predictor of gender differences beyond the age of 15. That is, differences do not appear to widen after this age.

School attendance within the Indigenous population favours females to different extents, depending on the explanatory variables included in each model. When only gender is used as an explanatory variable, Indigenous females are much more likely to be attending school than Indigenous males. As mentioned previously, the patterns of school attendance are complex for Indigenous males, and depend on a number of contributing factors outlined in models 2 and 3. Outcomes within the Indigenous population were generally more equitable in terms of test

scores and school attendance, indicating that targeted policy programs are needed in these areas to assist Indigenous males.

The LSAY and PISA data analysed here give significant insights into the educational outcomes of Indigenous and non-Indigenous adolescents, and also into their chances of future educational attainment. School exam performance, attendance and Year 12 completion are important predictors of future educational success. These three aspects of schooling also feed into each other. Absenteeism strongly affects exam performance (Biddle 2014), and test scores are a good predictor of Year 12 completion (Bradley & Nguyen 2004). Therefore, policies implemented to improve outcomes in these areas for Indigenous males should consider them jointly.

This paper is unapologetically quantitative in focus. Documenting the direction, size and robustness of differences between Indigenous males and females, and whether these differences are similar to those found for the non-Indigenous population, requires large, nationally representative and, ideally, longitudinal databases. Having said that, the interpretation of the results was strongly supported by more descriptive, qualitative and ethnographic evidence. It is hoped, furthermore, that the analysis presented in this paper will be engaged with and support further detailed analysis at a local or community level, as without such research it is difficult to understand and interpret the patterns found in the quantitative data.

Four of the seven targets of COAG's Closing the Gap policy relate to improving educational outcomes for Indigenous Australians. This is an obvious display of the importance Australian society places on education in achieving equality. As demonstrated by the analyses presented here, COAG's targets will only be met through policy programs that are targeted at improving the educational outcomes of Indigenous male adolescents. It is necessary for policy makers and educators to be aware of the gendered practices prevalent in Indigenous Australian culture. As previously outlined in great detail, various gendered cultural practices can also help to explain comparatively lower Indigenous male school attendance rates. Additionally, the Western view that education is an essential investment that each person needs to make to gain employment runs counter to other cultural priorities that some Indigenous Australians may hold (Kral & Schwab 2003). Cultural sensitivity is necessary when formulating policy that aims to improve Indigenous male educational outcomes.

Improving the educational outcomes of Indigenous men and women is essential for closing the gap between

Indigenous and non-Indigenous Australians. However, closing this gap will be made easier when policy makers realise that differences exist between the educational outcomes of Indigenous men and women, and that these need to be catered for through targeted policy programs.

Although this paper aimed to highlight the fact that Indigenous male educational outcomes lag behind those of their female counterparts in certain areas, it would be incorrect and, indeed, dangerous to assume that Indigenous women no longer require support to achieve positive educational outcomes. Instead, this paper highlights that, within the Indigenous population, males and females are achieving different educational outcomes. Therefore, nonspecific policies will not be effective in improving educational outcomes for Australia's Indigenous population. Indigenous men and women require support in different areas to improve their educational outcomes overall.

From preschool attendance all the way through to school test scores and university degree attainment, Indigenous men are lagging behind their female counterparts, and the negative effects of this last well into adult life, as demonstrated by life expectancy figures and incarceration rates. State and federal government policy must continue to support the educational outcomes of both Indigenous men and women so that 'the gap' between Indigenous and non-Indigenous Australians can indeed be closed.

## Notes

1. This was confirmed by running a pooled model, with Indigenous status interacted with gender.
2. These results were once again confirmed using pooled models, as well as by comparing confidence intervals around the estimations.
3. To put the results in perspective, the base-case levels of persistence (i.e. for males), reading from left to right across the figure, are 0.645, 0.567 and 0.609 for the Indigenous population, and 0.751, 0.790 and 0.787 for the non-Indigenous population.

## References

- ABS (Australian Bureau of Statistics) (2011). *Family characteristics, Australia, 2009–10*, cat no. 4442.0, ABS, Canberra.
- (2015). *Prisoners in Australia, 2015*. Aboriginal and Torres Strait Islander prisoner characteristics, cat no. 4517.0, ABS, Canberra.
- AIHW (Australian Institute of Health and Welfare) (2013). *The health of Australia's prisoners 2012*, cat no. PHE 170, AIHW, Canberra.
- Arcos-Holzinger L & Biddle N (2015). *The relationship between early childhood education and care (ECEC) and the outcomes of Indigenous children: evidence from the Longitudinal Study of Indigenous Children (LSIC)*, Working Paper 103, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- Bécares L & Priest N (2015). Understanding the influence of race/ethnicity, gender, and class on inequalities in academic and non-academic outcomes among eighth-grade students: findings from an intersectionality approach. *PloS One* 10(10):e0141363.
- Becker GS, Hubbard WHJ & Murphy KM (2010). Explaining the worldwide boom in higher education of women. *Journal of Human Capital* 4(3):203–241.
- Biddle N (2013). *Education part 2: school education*, Indigenous Population Project 2011 Census Papers, Paper 8, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- (2014). *Developing a behavioural model of school attendance: policy implications for Indigenous children and youth*, Working Paper 94, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- & Bath J (2013). *Education part 1: early childhood education*, Indigenous Population Project 2011 Census Papers, Paper 7, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- & Cameron T (2012a). The benefits of Indigenous education: data findings and data gaps. In: Hunter B & Biddle N (eds), *Survey analysis for Indigenous policy in Australia: social science perspectives*, ANU ePress, Canberra, 103–124.
- & Cameron T (2012b). *Potential factors influencing Indigenous education participation and achievement*, National Centre for Vocational Education Research, Adelaide.
- & Seth-Purdie R (2013). *Development risk exposure and participation in early childhood education: how can we reach the most vulnerable children?* HC Coombs Policy Forum, Australian National University, Canberra.
- Bourke CJ, Rigby K & Burden J (2000). *Better practice in school attendance: improving the school attendance of Indigenous students*, Commonwealth of Australia, Canberra.
- Bradley S & Nguyen AN (2004). The school-to-work transition. In: Johnes G & Johnes J (eds), *International handbook on the economics of education*, Edward Elgar Publishing Limited, Cheltenham, United Kingdom.
- Buchmann C, DiPrete TA & McDaniel A (2008). Gender inequalities in education. *Annual Review of Sociology* 34(1):319–337.
- Colbeck CL, Cabrera AF & Terenzini PT (2001). Learning professional confidence: linking teaching practices, students' self-perceptions, and gender. *Review of Higher Education* 24(2):173–191.
- Colley H, James D, Diment K & Tedder M (2003). Learning as becoming in vocational education and training: class, gender and the role of vocational habitus. *Journal of Vocational Education & Training* 55(4):471–498.
- Commonwealth of Australia (2015). *Closing the gap: Prime Minister's report 2015*, Australian Government Department of the Prime Minister and Cabinet, Canberra.
- Connolly P (1998). *Racism, gender identities and young children: social relations in a multi-ethnic, inner-city primary school*, Routledge, London.

- Craven R, Tucker A, Munns G, Hinkley J, Marsh H & Simpson K (2005). *Indigenous students' aspirations: dreams, perceptions and realities*, Australian Government Department of Education, Science and Training, Canberra.
- Crawford H & Biddle N (2015). *Education part 3: tertiary education*, Indigenous Population Project 2011 Census Papers, Paper 17, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- Heckman JJ & Mosso S (2014). *The economics of human development and social mobility*, NBER Working Paper 19925, National Bureau of Economic Research, Cambridge, Massachusetts.
- Hewitt B & Walter M (2014). Preschool participation among Indigenous children in Australia. *Family Matters* 95:41–50.
- Jacob BA (2002). Where the boys aren't: non-cognitive skills, returns to school and the gender gap in higher education. *Economics of Education Review* 21:589–598.
- Kral I (2010). *Generational change, learning and remote Australian Indigenous youth*, Working Paper 68, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- & Schwab RG (2003). *The realities of Indigenous adult literacy acquisition and practice: implications for capacity development in remote communities*, Discussion Paper 257, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.
- Mahuteau S, Karmel T, Mavromaras K & Zhu R (2015). *Educational outcomes of young Indigenous Australians*, report submitted to the National Centre for Student Equity in Higher Education, National Institute of Labour Studies, Flinders University, Adelaide.
- Millard E (2002). *Differently literate: boys, girls and the schooling of literacy*, Routledge, London.
- Naylor RA & Smith J (2004). Determinants of educational success in higher education. In: Johnes G & Johnes J (eds), *International handbook on the economics of education*, Edward Elgar Publishing Limited, Cheltenham, United Kingdom.
- Purdie N & Buckley S (2010). *School attendance and retention of Indigenous Australian students*, Issues Paper 1, Closing the Gap Clearinghouse, Australian Institute of Health and Welfare, Canberra, & the Australian Institute of Family Studies, Melbourne.
- Riphahn RT & Schwientek C (2015). What drives the reversal of the gender education gap? Evidence from Germany. *Applied Economics* 47(53):5748–5755.
- Rothman S (2009). *Estimating attrition bias in the Year 9 cohorts of the Longitudinal Surveys of Australian Youth*, Technical Report 48, Australian Council for Educational Research, Melbourne.
- SCRGSP (Steering Committee for the Review of Government Service Provision) (2014). *Overcoming Indigenous disadvantage: key indicators 2014*, Productivity Commission, Canberra.
- Shapiro JR & Williams AM (2011). The role of stereotype threats in undermining girls' and women's performance and interest in STEM fields. *Sex Roles* 66(3–4):175–183.
- Shields CM, Bishop R & Mazawi AE (2005). *Pathologizing practices*, Peter Lang, New York.
- Sikora J & Biddle N (2015). How gendered is ambition? Educational and occupational plans of Indigenous youth in Australia. *International Journal of Educational Development* 42:1–13.
- Thomson S, De Bortoli L & Buckley S (2013). *PISA 2012: how Australia measures up*, Australian Council for Education Research, Melbourne.
- Trzesniewski KH, Moffitt TE & Caspi A (2006). Revisiting the association between reading achievement and antisocial behaviour: new evidence of an environmental explanation from a twin study. *Child Development* 77(1):72–88.



Wehrwein EA, Lujan HL & DiCarlo SE (2007). Gender differences in learning style preferences among undergraduate physiology students. *Advances in Physiology Education* 31(2):153–157.

Yap M & Biddle N (2012). *Unpaid work, unpaid care, unpaid assistance and volunteering*, Indigenous Population Project 2011 Census Papers, Paper 4, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.

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